REMARKS

I. General

In the office action dated July 6, 2006, claims 18-21 and 24-26 were rejected on new grounds under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. For the reasons that follow, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 112, first paragraph rejection of claims 18-21 and 24-26. Additionally, for the reasons that follow, in connection with the aforementioned rejection under 35 U.S.C. § 112, first paragraph, Applicant respectfully contends that the 35 U.S.C. § 112, first paragraph rejection represents a new ground of rejection, which was not necessitated by Amendment, and, as a result, the finality of the office action dated July 6, 2006 was premature.

Claim 22 was rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,438,416 to Thurston (hereinafter referred to as "Thurston") in view of U.S. Patent No. 5,626,449 to McKinlay (hereinafter referred to as "McKinlay"). For the reasons that follow, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 112, first paragraph rejection of claims 18-21 and 24-26.

II. The finality of the Office Action dated July 6, 2006 was premature and should be withdrawn.

In connection with the rejection of claims 18-21 and 24-26 under 35 U.S.C. § 112, first paragraph, Applicant respectfully contends that the 35 U.S.C. § 112, first paragraph rejection represents a new ground of rejection, which was not necessitated by Applicant's amendments in the reply to the previous office action. Applicant presented the claims reciting a fastener in the preliminary amendment dated February 5, 2004, which was prior to the Examiner issuing a first office action. Accordingly, the amendments and responses submitted in reply to the previous office action did not introduce these claims elements. Therefore, Applicant respectfully submits that the finality of the office action dated July 6, 2006 was premature; and, accordingly, Applicant respectfully requests reconsideration and withdrawal of the finality of the office action dated July 6, 2006.

III. The 35 U.S.C. § 112, first paragraph rejection of claims 18-21 and 24-26 should be withdrawn.

According to the Examiner, claims 18-21 and 24-26 introduce new matter because "[t]he amendment deleting nut from the claims introduces new matter because there is no disclosure of the fastener assembly including a fastener other than a nut." However,

Applicant respectfully submits that the Examiner has blurred the distinction between the concept of breadth of scope with the concepts of the prohibition against introducing new matter or claiming subject matter in violation of the written description requirement.

The standard set forth in the M.P.E.P. regarding compliance with the written description requirement supports Applicant in this regard. In particular, according to the M.P.E.P., [t]o comply with the written description requirement of 35 U.S.C. 112, para. 1, ... each claim limitation must be expressly, implicitly, or inherently supported in the originally filed disclosure." M.P.E.P. § 2163(II)(A)(b). In the present instance, the term "fastener" is repeated throughout the application as filed. By way of example, claim 9 as originally filed explicitly recited a "fastener body," the title of the invention is "Fastener Assembly, and the preamble of the claims recite "Fastener Assembly." Accordingly, the use of the term "fastener" in place of the term "nut" represents a mere broadening amendment to the claims, for which there was adequate support in the specification as field. Furthermore, one skilled in the art, upon reading the application, would readily understand that the invention pertains to fasteners generally, and, in the preferred embodiment, to a fastener assembly that includes a nut. For one skilled in the art to conclude otherwise would require a complete disregard of the term fastener as used throughout the specification.

In addition to the Examiner's understanding being at odds with the standard set forth in the M.P.E.P., if followed to its logical conclusion, such reasoning would lend itself to the generation of a written description rejection every time a patent applicant claimed less then every detail shown in the disclosed embodiments, unless such an Applicant expressly disclosed every possible permutation. Such a rejection would be along the following lines: "Claim X does not recite feature Y and violates the written description requirement because the embodiments disclosed included feature Y." Clearly, the written description requirement does not require Applicant to claim every feature disclosed in connection with the illustrated embodiments. For at least these reasons, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 112, first paragraph rejection of claims 18-21 and 24-26.

IV. The 35 U.S.C. § 103 rejection of claim 22 should be withdrawn.

For a rejection under 35 U.S.C. § 102 or 103, the express, implicit, and inherent disclosure of a prior art reference may be relied upon in the rejection of claims. M.P.E.P. 2112. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. M.P.E.P. 2112(IV).

"To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill in the art. Id. Inherency may not be established by probabilities or possibilities and the mere fact that certain thing may result from a given set of circumstances is not sufficient. Id.

According to the Examiner, "the deformation of the washer in Thurston would include the deformation of the flange segments." However, Applicant respectfully points out that Thurston does not expressly teach that the areas between the slots 26 are flexible. Furthermore, the general statement that the washer deforms on Col. 3, ll. 56-60 of Thurston does not inherently mean that the flange segments necessarily flex, as the Examiner contends. In fact, the reference expressly teaches away from such an understanding, since the bent finger projections 70 are supposed be pressed into biting contact with the base material. Furthermore, as evidenced by the attached document in Exhibit A, it is a common characteristic for washers under loads to deform whereby there is a slight increase in the diameter of the washer. Accordingly, in the present situation, the missing descriptive matter of Thurston (i.e. that that areas between the slots 26 are flexible) is not necessarily present in the thing described (i.e. the washer deforming), since the deformation referred to Thurston may merely be an increase in the diameter of the washer, which, as previously mentioned, is a common characteristic of washers. Accordingly, for at least this reason, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claim 22.

With respect to the Examiner's contention that the term "flexible" as claimed is an intended use, Applicant respectfully contends that "flexible" is a clear structural element in the claim at issue. The cases of In re Casey and In re Otto are simply not on point in this regard. In particular, in the case of In re Casey, the appellant contended that the claims at issue were patentable, since they required that the claimed structure be used as a "taping machine" and "tape dispensing machine" and none of the structures taught in the prior art were used for this purpose.. In re Casey, 54 C.C.P.A. 938, 941, 370 F.2.d 576, 579, 152, U.S.P.Q. 235 (C.C.P.A. 1967). Likewise, in the case of In re Otto, which involved device claims, the court noted:

> "[i]t seems appellants are endeavoring to predicate patentability upon a certain procedure for curling hair using this device and involving a number

of steps in the process. This process is irrelevant as is the recitation involving the hair being wound around the core insofar as the determination of whether these particular claims should be allowed or rejected."

In re Otto, 50 C.C.P.A. § 938, 940, 312 F.2d 937, 136 U.S.P.Q. 458 (C.C.P.A. 1963). The claimed recitation of "said flange segments being slightly flexible axially of said washer" simply does not imply the use of the claimed device, but, rather, describes a structural characteristic of the device. Accordingly, for at least this reason, Applicant respectfully requests reconsideration and allowance of claim 22.

V. Conclusion.

Applicant submits that the subject matter of the present application is novel, non-obvious, and useful, and, therefore, respectfully requests prompt consideration and allowance of the application.

Dated: October 6, 2006

Respectfully Submitted,

Michael Pruden
(Reg. No. 52,135)

EXHIBIT A

ITW Shakeproof

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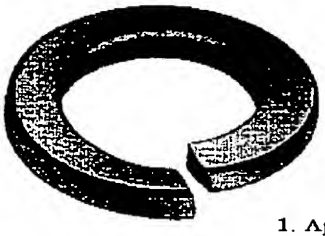
HELICAL SPRING LOCKWASHERS



FUNCTION OF THE HELICAL SPRING LOCKWASHER

Historically, helical spring lock washers have been among the most widely used anti-loosening assembly components on the market. They have been specified in thousands of assembly applications because they work—and work extremely well. They enhance the security of general industrial assemblies in the following ways:

1. Apply greater bolt tension per unit of applied torque.
2. Provide hardened bearing surfaces to create more uniform torque control.
3. Provide more uniform load distribution through controlled radii (section) cutoff.
4. Provide protection against looseness resulting from vibration and corrosion.
5. Optimum locking device for use in applications with hardened faying or bearing surfaces.

The "Split" in the helical spring lock washer absorbs initial driving torque and visually closes under nominal bolt loading. When tension in the assembly is reduced and loosening occurs, it provides resistance to the back-off rotation of the screw.

Independent tests show that this is just a small part of the helical spring lockwasher's contribution to assembly integrity.

Helical washers are trapezoidal in section. After the single-coil spring closes to the flat condition, further loading results in additional deformation of the washer.

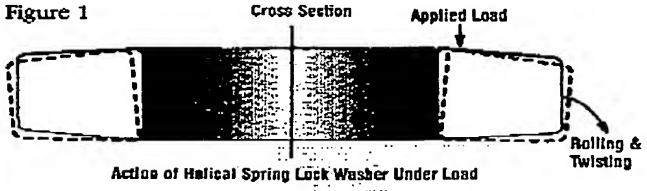
This further deformation is caused by a complex twisting of the trapezoidal section and a slight increase in the diameter of the washer under load. (See Figure 1.)

The spring rate which is developed by the final deformation is very high and provides a reactive load that is equivalent to a significant increase in effective bolt length.

Bolts stretch under load. The longer the effective length of the bolt, the more it can stretch. A hardened steel bolt, when stressed at 60,000 psi, will elongate approximately .002" per inch of effective length. A long bolt can, therefore, be a very effective spring and, like a spring when stretched, it attempts to return to its original length. This applies a clamping or tightening force to the assembly.

The clamped components are compressed and, in their inherent effort to expand to their original form, they set up an opposing force. It is these two forces that create the dynamics of a tight assembly.

Figure 1



Action of Helical Spring Lock Washer Under Load

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SPRING RATE

Two terms are used to define and measure these described forces. One is Spring Rate. The other is equivalent bolt length.

Spring Rate is the ratio of load to deflection in the loaded part; it is deflection related to load and is expressed in terms of the amount of load required to achieve specific levels of deflection. The optimum joint performance is obtained when the spring elements in the fastening system have a spring rate which is low enough to assure that any yielding of the joint members in compression will not significantly reduce the designed tensile stress in the fastener. To obtain this optimal condition, the conventional solution is to utilize the spring characteristics of very long bolts. An auxiliary spring element, such as helical spring lock washer, is a very effective alternative.

Tests run by Lawrence Technological University have shown that the typical helical spring lock washer exhibits a spring rate after flattening which is approximately 70% more effective than a flat washer of the same thickness.

What this means to the design engineer is that the effective bolt length in the joint is increased by the thickness of the flattened helical spring lock washer, plus the equivalent length provided by the spring rate derived from the visually flattened washer. Tested at 75% of the hardened bolt proof load, the equivalent bolt length is as shown in figure 2.

Figure 2

EQUIVALENT BOLT LENGTH
Equivalent Bolt Length (Inches)

Washer Size (Inches)	Helical Lock Washers	
	Regular	Heavy
3/8	0.656	0.741
7/16	0.686	0.722
1/2	0.730	0.803

The total contribution of a helical spring lock washer to the integrity of an assembly, in addition to the commonly recognized frictional resistance to back-off rotation, includes the reactive length added to the bolt by the washer thickness and by the tension of Spring Rate generated by its compression.

The significant contribution of the helical spring lock washer to the overall tightness of an assembly is best shown in the test results for an assembly without a washer and an assembly that includes a helical spring washer.

Generated Spring Rates Expressed in Equivalent Bolt Lengths

Thickness of Assembled Components		Equivalent Bolt Length to Attain Comparable Spring Rate of Components Under Load	
		JOINT WITHOUT WASHER	
Bolt head height	0.24"	Half of head height (deflected)	0.12"
2 Assembled 1/8" plates	0.25"	Total thickness of assembled plates	0.25"
Nut thickness	0.32"	Half of nut thickness (deflected)	0.16"
Total thickness	**0.81"**	**Equivalent bolt length**	**0.53"**
		JOINT WITH 3/8" DIAMETER HELICAL SPRING LOCKWASHER	
Bolt head height	0.24"	Half of head height (deflected)	0.120"
2 Assembled 1/8" plates	0.25"	Total thickness of assembled plates	0.250"
Helical washer thickness	0.10"	Total thickness of washer	0.100"
		Additional spring rate contributed by compressed washer	0.656"
Nut thickness	0.32"	Half of nut thickness (deflected)	0.160
Total thickness	**0.91"**	**Equivalent bolt length**	**1.286"**

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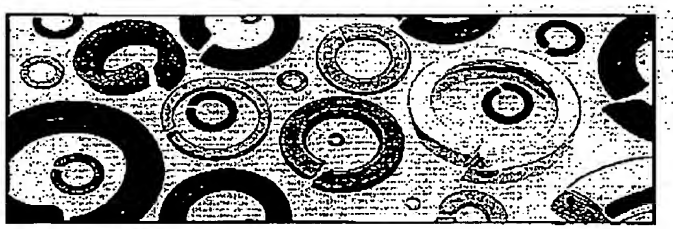
GENERAL INFORMATION



STANDARDS

WCL helical spring lock washers qualify under the major standards requirements established by ASME (the American Society of Mechanical Engineers) and DOD (Department of Defense) for components of this type.

MILITARY SPECIFICATIONS

MS35338-, MS35340-, MS51416-, MS51415-, MS51848-, MS122029 thru MS122036, NAS1640, NAS1676
Also Ordnance series 12387272 - XX, 12387302 - XX

AMERICAN SOCIETY OF MECHANICAL ENGINEERS:

ASME B 18.13, ASME B 18.21.1, ASME B 18.21.2M

MATERIALS

Carbon Steel - SAE 1055 - 1065
Boron Steel - 10B55 - 10B65
Alloy Steel - SAE 4037
Stainless Steel - SAE 304, SAE 316, SAE 420
Aluminum Alloy - ASTM-B 211, 7075
Phosphor Bronze - ASTM-B 159, Copper Alloy NO.510
Silicon Bronze - ASTM-B 99, Copper Alloy NO.651 or 655
Monel K500 - QQ - N - 286

FINISHES

When carbon steel helical spring washers are required for galvanizing, this must be indicated on the order or inquiry. ASME standards call for such washers to be coiled to limits 0.020" in excess of conventional standards. Galvanizing is not recommended for washers under a 1/4" nominal size.

Helical washers are available in the following finishes:

Mechanical Zinc
Electro Zinc
Mechanical Galvanized
Hot Dip Galvanized,
Phosphate Coating
Black Oxide

Other materials and finishes are available on special request. Mechanical Finish will limit exposure to hydrogen embrittlement unless otherwise specified.

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HARDNESS TESTING

In preparing a helical spring washer for hardness testing, it should first be twisted to remove the helix and form a near flat surface.

Due to the trapezoidal cross section of the washer, both sides must be filed or ground flat to assure accurate readings. This also removes decarburization and plating from the surface. Care must be taken to assure that surface temperature does not exceed 250°F during this operation. (See figure 3.)

An essential requirement of the Rockwell test is that the penetrator be perpendicular to the surface of the test piece and that the test piece not move, in the slightest degree, as the test load is applied. One point of hardness represents a depth of only 0.00008". A movement of only .001" could cause an error of over 10 Rockwell numbers.

Penetration should be made in the center of the washer's flattened surface and readings should not be taken too close together. If the indentation is made too close to the edge of the test washer, the material will yield, giving incorrect low readings. Also, the area surrounding the indent will be cold worked. Subsequent indentations, if made in the cold worked area, will give incorrect readings-usually higher that the virgin material. Also, test penetrations should be made on only one side of the washer.

The thickness of the test sample will determine the correct testing weight to use. Refer to Rockwell test charts to determine proper weight and scale use. To insure the most accurate readings, use the maximum weight possible. However, caution should be taken not to use a weight greater that the width and thickness will accommodate.

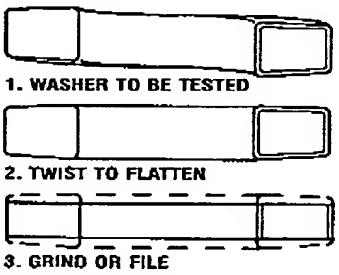

Figure 3

Applicable hardness requirements are:

Material	HRC	HV
Carbon Steel	38-46	372-458
Austenetic Stainless Steel	35-43	345-423
Monel K500	33-40	327-392
HRB	HV	
Aluminum alloy	75-97	137-222
Phosphor Bronze	90 Min	185 Min
Silicon Bronze	90 Min	185 Min

DECARBURIZATION

Carbon steel spring washers, tested in accordance with ASME B 18.21.1, 1994 revision, should meet the following limits for decarburization:

Diameters of Round Wire or Section of Equivalent Area	Maximum Depth of Free Ferrite	Maximum Total Affected Depth (Free Ferrite Plus Partial Decarburization)
Up to 0.140, incl.	0.002	0.006
0.140 to 0.250, incl.	0.003	0.008
0.250 to 0.375, incl.	0.004	0.010
0.375 to 0.500, incl.	0.006	0.015

All measurements in inches.

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